

CLAIMS

What is claimed is:

1. Apparatus for spinning melt-spun filament yarns comprising:

a. a spin beam;

5 b. an operational heater for heating the spin beam to an operating temperature during the spinning; and

c. a regenerative heater for heating the spin beam to a regeneration temperature above the operating temperature.

10 2. Apparatus according to Claim 1, further including a controller for coordinating an operation of the operational heater and the regenerative heater.

3. Apparatus according to Claim 2, further including at least one temperature sensor in communication with the controller.

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4. Apparatus according to Claim 1, further including a polymer melt source for providing a polymer melt to the spin beam.

5. Apparatus according to Claim 4, wherein the polymer melt source comprises one of an extruder and a polycondensation reactor.

6. Apparatus according to Claim 4, wherein the polymer melt source provides
5 the polymer melt to at least one spinning pump.

7. Apparatus according to Claim 6, wherein the at least one spinning pump meters the polymer melt to at least one spinning can through at least one melt-conducting part.

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8. Apparatus according to Claim 7, further including at least one spinning can receivers associated with the at least one spinning can.

9. Apparatus according to Claim 7, wherein the at least one spinning pump
15 meters the polymer melt to a plurality of spinning cans through a plurality of melt-conducting parts.

10. Apparatus according to Claim 9, wherein a total length of each of the plurality of melt-conducting parts is substantially the same.

11. Apparatus according to Claim 9, further including a plurality of spinning can receivers, at least one of the plurality of spinning can receivers is associated with each of the plurality of spinning cans.

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12. Apparatus according to Claim 9, wherein at least one of the plurality of melt-conducting parts is associated with each of the plurality of spinning cans.

13. Apparatus according to Claim 1, wherein the an operational heater is capable
10 of heating the spin beam using a heat transfer medium.

14. Apparatus according to Claim 13, wherein the heat transfer medium is one of an oil and a diphyl.

15 15. Apparatus according to Claim 1, wherein the an operational heater is capable of heating the spin beam to an operating temperature of between about 250 to 330°C.

16. Apparatus according to Claim 13, further including a collection reservoir for the heat transfer medium.

17. A regenerative heater for use in an apparatus for spinning melt-spun filament yarns having a spin beam and an operational heater for heating the spin beam to an operating temperature during spinning, the regenerative heater being removably attachable to the spin
5 beam and for heating the spin beam to a regeneration temperature above the operating temperature.

18. The regenerative heater according to Claim 17, wherein the regenerative heater includes a trace heater in communication with a melt-conducting part of the spin
10 beam.

19. The regenerative heater according to Claim 18, wherein the trace heater comprises an electrical heater.

15 20. The regenerative heater according to Claim 17, wherein the regenerative heater comprises a blower.

21. The regenerative heater according to Claim 20, wherein the blower further includes a feed and an exhaust for communicating with a portion of the spin beam.

22. The regenerative heater according to Claim 21, wherein the blower further includes a filter capable of removing residue generated during a regeneration of the spin beam.

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23. The regenerative heater according to Claim 21, wherein the blower further includes a parallel path for communicating with another portion of the spin beam.

24. The regenerative heater according to Claim 17, further including an exhaust
10 device for exhausting gases generated during a regeneration of the spin beam.

25. The regenerative heater according to Claim 24, wherein the exhaust device further includes a filter an for filtering the gases generated during a regeneration of the spin beam.

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26. The regenerative heater according to Claim 17, further including a compressed air supply in communication with a melt-conducting part of the spin beam.

27. The regenerative heater according to Claim 17, wherein the regenerative heater includes an electrical heater.

28. The regenerative heater according to Claim 27, wherein the electrical heater
5 includes at least one of at least one heating coil, at least one heating rod, and combinations thereof.

29. The regenerative heater according to Claim 28, wherein the electrical heater comprises the at least one heating rod replacing at least one stopper within the spin beam.

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30. The regenerative heater according to Claim 17, wherein the regenerative heater includes one of at least one convection heater, at least one radiation heater, and combinations thereof.

15 31. The regenerative heater according to Claim 27, wherein the operational heater and the regenerative heater are the same.

32. The regenerative heater according to Claim 17, wherein in that the operational heater is capable of being operated as the regenerative heater to a temperature between about 450 to 550°C.

5 33. Apparatus for spinning melt-spun filament yarns comprising:

- a. a spin beam;
- b. an operational heater for heating the spin beam to an operating temperature during the spinning; and
- c. a removably attachable regenerative heater for heating the spin beam
10 to a regeneration temperature above the operating temperature; and
- d. a controller for coordinating an operation of the operational heater and the regenerative heater.

34. A method for regenerating an apparatus for spinning melt-spun filament yarns, the method comprising the steps of:

- a. providing a spin beam;
- b. heating the spin beam to an operating temperature during the spinning of a polymer melt; and
- c. heating the spin beam to a regeneration temperature above the operating temperature subsequent to the spinning of a polymer melt so as to permit the removal of any residual polymer form the spin beam.

35. A method for regenerating an apparatus for spinning melt-spun filament yarns, the method comprising the steps of:

- a. removably attaching a regenerative heater to a spin beam subsequent to the spinning of a polymer melt;
- b. heating the spin beam using the regenerative heater to a regeneration temperature above an spinning operating temperature subsequent to facilitate a removal of any residual polymer form the spin beam; and
- c. removing the regenerative heater from a spin beam.

36. A method for regenerating an apparatus for spinning melt-spun filament yarns, the method comprising the steps of:

- a. providing a heater to spin beam;
- b. heating the heater to a temperature so as to create an operating temperature in the spin beam during the spinning of a polymer melt;
5 and
- c. heating the heater to a temperature so as to create a regeneration temperature above the operating temperature in the spin beam subsequent to the spinning of a polymer melt so as to permit the
10 removal of any residual polymer form the spin beam.